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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Rotary Regenerative Preheater

We, SVENSKA ROTOR MASKINER AKTIEBOLAG, a joint stock company organised under the laws of Sweden, of Nacka, Sweden, do hereby declare the invention, for which we pray that a Patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to rotary regenerative heat exchangers of the kind including a generally cylindrical regenerator body divided into sector-shaped compartments carrying regenerative material, inlet and outlet duct assemblies mounted adjacent opposite end faces of the body for a heated gaseous fluid and a gaseous fluid to be heated respectively, the body and the duct assemblies being relatively rotatable so that each fluid is caused to pass alternately through each compartment to effect heat exchange therebetween, and movable sealing members adjacent opposite end faces for sealing-off one or more compartments between those compartments through which the respective fluids are passed.

The regenerative material may consist of metal plates located in the sector-shaped compartments. Such an arrangement is described in our prior British Patent No. 737964 which relates to a Ljungström type heat exchanger. In 737964, the duct assemblies for the two fluids are separated by sealing members of sector-shape pivoted in the region of the axis of the cylindrical regenerator body, to permit a tilting movement up and down, that is, towards and away from the circular end face of the body. In addition, 737964 describes the use of jacket plates extending axially of the cylindrical body affording a peripheral seal.

Regenerative heat exchangers are often used in large scale boiler plant for pre-heating combustion air by the waste flue gases from boiler furnaces and, in operation, the regenerator body is subjected to a wide

range of temperature variations. The wide temperature variations result in considerable thermal expansion and contraction of the regenerator body and one of the major difficulties confronting engineers engaged in this field is that of providing an effective and readily adjustable seal between the respective ducts. For example, if sector-shaped sealing plate members are used to separate the ducts and if these members are adjusted to the smallest clearance to reduce leakage when the regenerator body is at its lowest working temperature, this clearance is usually unsatisfactory when the temperature of the body has reached its highest working temperature due to the attendant thermal expansion. Subsequent adjustment is therefore necessary.

In one known form of regenerative heat exchanger sector shaped plate sealing members are supported on rollers mounted to roll on a flange formed on the shell of the rotatable regenerator body and forces are applied to maintain the rollers in contact with the flange, the positions of the rollers being adjustable to regulate the clearance. This known form has the disadvantage of producing a high rolling friction between the rollers and the flange since the force applied must be sufficiently large to prevent the sealing members uncovering the regenerator body to an extent greater than the clearance set. Moreover, this force required to maintain the clearance imparts a permanent load on the rollers or other supporting elements for example wheels, resulting in considerable wear and consequent reduction in the life of both the elements and the flange. In addition, the elements are subjected to physical and chemical attacks by the impurities contained in the waste flue gases.

In medium and small sized regenerative heat exchangers the disadvantages referred to, although not occurring to the same extent